

## AMENDMENTS TO THE CLAIMS

1. (Cancel)

2. (Currently amended) In a multi-user detection system in which interfering signals are purposely allowed to exist, a parameter estimation unit for use in conjunction with a signal separation unit, in which each received signal has associated channel transfer functions, comprising:

a signal processor for determining ~~the said~~ channel transfer functions for each received signal; and,

means coupled to said channel transfer function determining signal processor for providing uninterrupted estimates of the channel transfer function parameters on a real-time basis by first deriving the estimated channel transfer function for each of said interfering signals.

3. (Original) The parameter estimation unit of Claim 2, wherein said multi-user detection system includes a base station with a base station clock having a clock frequency offset, and wherein said channel transfer function parameters include for each received signal at least one of received power, oscillator phase of the oscillator used to produce an interfering signal, timing offset relative to the base station clock frequency offset, number of multi-path replicas and delays for each replica.

4. (Cancel)

5. (Original) The parameter estimation unit of Claim 2, wherein the multi-user detection system includes providing an acquisition channel, and wherein the first derived estimated channel transfer function is derived from acquisition channel parameters.

6. (Currently amended) The parameter estimation unit of Claim 2, wherein said multi-user detection system includes a tracking unit for acquired signals, and wherein in the presence of a new signal in the acquisition channel of said parameter estimation unit estimates the channel transfer function prior to signal switching from the acquisition channel to the traffic channel, with said parameter estimation unit parameters being passed to said tracking unit thereafter.

7. (Currently amended) The parameter estimation unit of Claim ~~6~~, 2, and further including a traffic channel, and wherein for said traffic channel phase is tracked without utilization of the estimates from the acquisition channel.

8. (Currently amended) The parameter estimation unit of Claim ~~7~~ 6, wherein all received signals have training portions, and wherein for a second interfering signal ~~detected by said base station~~ and assigned to said traffic channel, said parameter estimation unit recreates the training signal portion of every received signal prior to the last received signal and subtracts the recreated training signals from the training portion of the last received signal to provide an estimate solely due to the last received signal during the training signal portion, thus to allow an estimate of the last signal from which to calculate parameters of the last signal.

9. (Original) The parameter estimation unit of Claim 2, wherein after initial estimate generation, said multi-user detection system simultaneously tracks all signals in said traffic channel.

10. (Original) The parameter estimation unit of Claim 9, wherein said simultaneous tracking includes blocks for parallel recreation of the training signal portions of the traffic channel signal, each parallel processing block isolating a different signal in said traffic channel.

11. (New) In a multi-user detection system in which interfering signals are purposely allowed to exist, a parameter estimation unit for use in conjunction with a signal separation unit for estimating channel transfer function parameters from channel transfer functions, comprising:

a signal processor for determining said channel transfer functions for each received signal; and,

means coupled to said channel transfer function determining signal processor for providing uninterrupted estimates of the channel transfer function parameters on a real-time basis, said multi-user detection system including a tracking unit for acquired signals, and in the presence of a new signal in the acquisition channel of said parameter estimation unit estimating the channel transfer function prior to signal switching from the acquisition channel to a traffic channel, with said parameter estimation unit parameters being passed to said tracking unit thereafter, all received signals having training portions, a second interfering signal being and assigned to said traffic channel, said parameter estimation unit recreating the training signal portion of every received signal prior to the last received signal and subtracting the recreated

training signals from the training portion of the last received signal to provide an estimate solely due to the last received signal during the training signal portion, thus to allow an estimate of the last signal from which to calculate parameters of the last signal.